

Work Order ID 75629

\*75629\*

Page 1

October-27-11 11:35:03 AM

Item ID: D6002-115 Accept \*N9000040100\* Setup Start \*NS1\*  
 Revision ID: Stop \*NS2\*  
 Item Name: Cross tube Material  
 Start Date: 27/10/2011 Start Qty: 20.00 \*20\* Cust Item ID:  
 Required Date: 28/02/2013 Req'd Qty: 20.00 \*20\* Customer:  
 Reference:

Approvals: Process Plan: MLJ Date: 11/10/27 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start \*NR1\*  
 QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D6002	Rev A

100	PURCHASING	0.00							
*100*									
Purchasing	Memo	0.00							
Purchasing	Issue P/O <u>15345</u> a) Extrude as per Dwg D6002b) Material: 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11 ) seamless aluminum tube c) Minimum ultimate tensile strength = 77 ksi d) Minimum tensile yield strength = 66 ksi e) Material certification								

110	Receive & Inspect for Damage & Mat'l Certs	0.00							
*110*									
Packaging	Memo	0.00							
Packaging	Ensure material certification is attached								

120	QC6- Inspect dimensions to drawing	0.00							
*120*									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg D6002								

DA's  
16  
223 12/11/03

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**Work Order ID 75629****\*75629\***

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October-27-11 11:35:03 AM

Item ID: D6002-115 Accept **\*N900040100\*** Setup Start **\*NS1\***  
Revision ID: Stop **\*NS2\***  
Item Name: Crosstube Material  
Start Date: 27/10/2011 Start Qty: 20.00 **\*20\*** Cust Item ID:  
Required Date: 28/02/2013 Req'd Qty: 20.00 **\*20\*** Customer:  
Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start **\*NR1\***  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop **\*NR2\***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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130	Chemical Conversion Coat per QSI005 4.1	0.00							
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**\*130\***

HandFinish

Memo

0.00

Hand Finishing

140

Identify as per dwg & Stock Location: **LG** 0.00**\*140\***

Packaging

Memo

0.00

Packaging

150

QC21- Final Inspection - Work Order Release 0.00

**\*150\***

QC

Memo

0.00

Quality Control

NIA **12-11-5**

**12/11/5**

**12/11/6**

**ML5 12-11-05**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

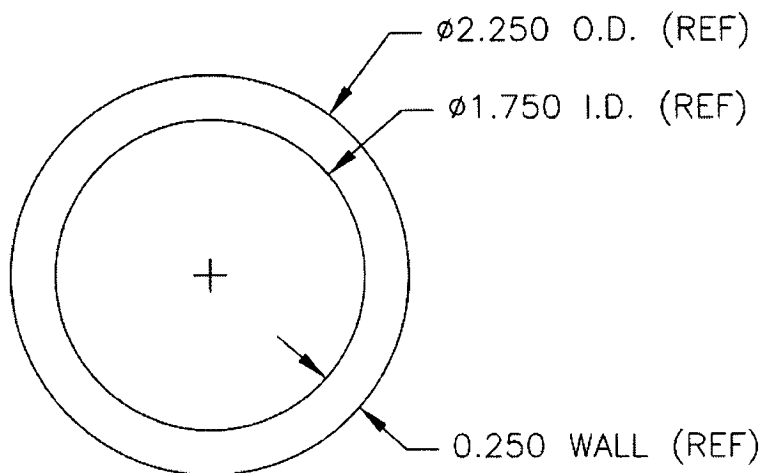


DESIGN <i>CP</i>	DRAWN BY <i>CP</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>A</i>	APPROVED <i>A</i>	DRAWING NO. D6002	REV. A SHEET 1 OF 1
DATE 00.11.22		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	00.11.22	NEW ISSUE	

## SPECIFICATION CONTROL DRAWING

RELEASED  
00.11.24 *OK*

STAY COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 75629 M.L.J  
11/10/27



### NOTES

- 1) D6002-XXX CROSSTUBE  
LENGTH

WHERE XXX IS LENGTH IN INCHES  
EG. 115" LONG TUBE: D6002-115

- 2) MATERIAL: 2.250 OD x 0.250 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.  
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi  
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:  
O.D.:  $\pm 0.006$  MEAN ( $\pm 0.012$  INCLUDING OVALITY)  
WALL:  $\pm 0.008$  MEAN ( $\pm 0.025$  INCLUDING ECCENTRICITY)  
LENGTH: XXX  $+0.125/-0.000$   
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO15345

Purchase Order Date 11/03/11

PO Print Date 12/07/11

Page Number 1 of 2

Order From :

VU-ALU001

ALUMINIUMWERK UNNA AG  
630 3033 SOUTH PARKER RD  
AURORA, CO 80014  
USA

Contact Name

Vendor Phone

303 755 5672

Vendor Fax

303 755 5936

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

USD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

REVISED

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	D6002-115P	Crosstube material	11/28/12 Yes	20.00 Each		\$307.0000	\$6,140.00
Special Inst:			AS PER DWG D6002 REV. A B75629 MATERIAL: 7075-T6/T6511 AS PER QQ- A-700/7 OR QQ-A-200/11 SEAMLESS ALUMINUM TUBE MINIMUM ULTIMATE TENSILE STRENGTH = 77 KSI MINIMUM YIELD TENSILE STRENGTH = 66 KSI SIZE: 2.250" OD X 0.250" WALL X 115" LONG				
2	D6009-129P	Crosstube Material	11/28/12 Yes	20.00 Each		\$996.0000	\$19,920.00

me18  
12/4/27

Change Nbr:

4

Change Date: 12/07/11

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required when applicable



ALUnna ref. no.	44988/100
Customer PO.	Po. 15345
Date:	10.01.12

Dart Aerospace
Po. 15345, D6002-115
Made in Germany Dest.: Hawkesbury Ont. Canada

**free from live plant pests**

S:\VERSAND\USA\_Packliste\44988\_100



# Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1 - DIN EN 10204:2005

**Kunde:**

Dart Aerospace Ltd.

Client:

1270 Aberdeen Street  
K6A1K7 Hawkesbury, ON Canada

**Produkt:**

Product / Produit:

Rohre nahtlos gepresst  
Tubes seamless extruded

**Spezifikation:**

Specification:

AMS - QQ - A - 200/11; Spezifikation Dart Aerospace D6001

**Werkstoff:**

Alloy/Alliage:

7075

**Abmessung**

Size / Dimension

2,250 INCH x 1,750 INCH x 0,250 INCH x 115,000 INCH  
D6002-115 2.250 X 0.250 X 115

**Kennzeichnung**

Marking/Marquage:

ALUnna - CERT NO. 1285/12 - 7075 - T6511 - CAST NO. 8241 - QQ - A - 200/11E - 2.250" OD x 0.250" WALL -  
HEAT LOT NO. 802447 - ALUNNA ORDER CONF. NO. 44988/100-1 - PO 15345

**Zeugnisnummer:**

1285/12

Cert No.: / No. du certificat:

PO 15345

**Bestellnummer:**

Order No. / No. de commande

**Auftrag:**

44988/100

Our Reference/Notre Reference:

**Zustand:**

Temper/État

T 6511

**Lieferung**

Delivered Material / Matériel délivré:

pcs.

lbs

Country of Manufacture: Germany

20

373

Products are in accordance with applicable RoHS

**1. Chemische Analyse**

Chemical Analysis / analyse chimique

Elemente ohne Grenzwerte:  
einzel max. 0,05 %, insgesamt 0,15 %

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
Charge/ min.			1,2		2,1	0,18	5,1						
Cast No. max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20					
8241/12	0,082	0,170	1,415	0,092	2,179	0,205	5,908	0,038	0,003	0,0263	0,0001	0,0015	0,0001

Hydrogen content: 0,15

ccm/100 g Al Elements without indication < 0,01 %

country of melt manufacturer: Germany

**2. Mechanische Eigenschaften**

Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat Lot No.
min.	77,0	66,0	7,0			
max.						
1	80,475	73,225	12,0			802447

RMS: outside 25 - max. 13,0 µ"

**Ergebnis der  
Prüfungen:**

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

Resultats:

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

TaschkeD



Certified acc. DIN EN ISO 9001:2008 and DIN EN 9100:2003  
valid until 2013-11-10

Cert.- Reg. No.: 001959 QM08; 001959 ASH



ALUnna

Abnahmebeauftragter

18.09.2012

Aluminiumwerk Unna AG, Uelzener Weg 36, 59425 Unna, Germany



# EXTRUSION INSPECTION SHEET

		SIDE A		SIDE B		ULTRA SONIC MEASUREMENTS						
TUBE #	TOTAL LENGTH	DIA two readings	DIA two readings	INSIDE DIA	wall thickness measured w/vern	Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4
DWG	115.00"	2.250"		1.750"	0.250"	0.010"	N/A	Middle	N/A			
1	115.00"	2.243"/2.250"	2.244"/2.247"	1.738"	0.254"/0.250"	0.0045"	N/A	Middle	0.255"	0.246"	0.254"	0.263"
2	115.00"	2.244"/2.253"	2.244"/2.251"	1.740"	0.252"/0.259"	0.001"	N/A	Middle	0.255"	0.260"	0.257"	0.253"
3	115.00"	2.246"/2.253"	2.240"/2.244"	1.737"	0.251"/0.257"	0.0035"	N/A	Middle	0.258"	0.254"	0.252"	0.256"
4	115.00"	2.243"/2.249"	2.244"/2.251"	1.735"	0.255"/0.247"	0.0025"	N/A	Middle	0.249"	0.257"	0.262"	0.255"
5	115.00"	2.243"/2.249"	2.248"/2.251"	1.732"	0.252"/0.259"	0.0065"	N/A	Middle	0.255"	0.252"	0.257"	0.261"
6	115.00"	2.248"/2.257"	2.247"/2.255"	1.736"	0.249"/0.266"	0.0025"	N/A	Middle	0.259"	0.261"	0.252"	0.251"
7	115.00"	2.247"/2.244"	2.247"/2.249"	1.736"	0.244"/0.256"	0.004"	N/A	Middle	0.264"	0.256"	0.251"	0.255"
8	115.00"	2.243"/2.248"	2.243"/2.249"	1.731"	0.244"/0.265"	0.0075"	N/A	Middle	0.252"	0.254"	0.260"	0.257"
9	115.00"	2.248"/2.245"	2.246"/2.251"	1.738"	0.247"/0.256"	0.003"	N/A	Middle	0.256"	0.250"	0.252"	0.261"
10	115.00"	2.247"/2.251"	2.249"/2.251"	1.738"	0.253"/0.259"	0.0025"	N/A	Middle	0.255"	0.261"	0.256"	0.251"
11							N/A	Middle				
12							N/A	Middle				
13							N/A	Middle				
14							N/A	Middle				
15							N/A	Middle				
PART # D6002-115		P/O# 15345			BATCH # B75629			Notes:				

